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65913 7590 03/23/2010

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1109 MCKAY DRIVE
SAN JOSE, CA 95131

EXAMINER

NGUYEN, TUAN HOANG

ART UNIT

PAPER NUMBER

2618

DATE MAILED: 03/23/2010

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,620	07/01/2004	Jigang Liu	CN 020002	4330

TITLE OF INVENTION: TRANSCEIVER WITH MULTI-STATE DIRECT DIGITAL SYNTHESIZER DRIVEN PHASE LOCKED LOOP

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	06/23/2010

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. **PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS** FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

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(Depositor's name)
(Signature)
(Date)

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10/500,620	07/01/2004	Jigang Liu	CN 020002	4330

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nonprovisional	NO	\$1510	\$300	\$0	\$1810	06/23/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
NGUYEN, TUAN HOANG	2618	455-260000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a **Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
 (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

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This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 30 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 30 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability**Application No.**

10/500,620

Applicant(s)

LIU, JIGANG

Examiner

TUAN H. NGUYEN

Art Unit

2618

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 11/09/2009.
2. ☒ The allowed claim(s) is/are 21,23-25,32,34,36-39 and 41-46.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

/Tuan H. Nguyen/
Examiner
Art Unit 2618

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 01/19/2010 has been considered by Examiner and made of record in the application file.

Examiner's Amendment

2. Authorization for this examiner's amendment was given in a telephone interview with Attorney Mr. Robert D. McCutcheon, Registration No. 38,717 on 03/01/2010.
3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.
4. The application has been amended as follows:

In the claims:

- . Claims 22, 26, 27, 29, 33, 35, 40 and 47 cancelled.

. Claim 21 amended as the following:

21. (Currently Amended) A transceiver comprising:

a digital synthesizer;

a phase locked loop coupled to the digital synthesizer;

wherein when the transceiver is in a transmitting mode, the digital synthesizer ~~receives~~ is configured to receive a modulation signal, ~~modulates-modulate~~ a reference signal in response to the modulation signal, and ~~transmits~~ transmit the modulated reference signal to the phase locked loop; ~~and~~ wherein when the transceiver is in a receiving mode, the digital synthesizer ~~receives~~ is configured to receive a non-modulation signal, ~~generates-generate~~ a non-modulated reference signal, and ~~transmits~~ transmit the non-modulated reference signal to the phase locked loop; and wherein the digital synthesizer and the phase locked loop-form a digital synthesizer, driven phase locked loop, and the digital synthesizer driven phase locked loop is configured to operate in a modulating state when the transceiver is in the transmitting mode and is configured to operate in an oscillating state when the transceiver is in the receiving mode.

. Claim 25 amended as the following:

25. (Currently Amended) A transceiver comprising: a digital synthesizer; a phase locked loop; a modulation signal generator ~~which transmits~~ configured to transmit a modulation signal to the digital synthesizer in response to a first control signal; and a non-modulation signal generator ~~which transmits~~ configured to transmit a non-modulation signal to the digital synthesizer in response to a second control signal; wherein in response to receiving the modulation signal, the digital synthesizer ~~modulates~~ is configured to modulate a reference signal by the modulation signal and ~~transmits~~ transmit the modulated reference signal to the

phase locked loop; ~~and~~ wherein in response to receiving the non-modulation signal, the digital synthesizer ~~generates~~ is configured to generate a non modulated reference signal and ~~transmits to transmit~~ the non- modulated reference signal to the phase locked loop; ~~wherein the first control signal is generated when the transceiver is in a transmitting mode and the second control signal is generated when the transceiver is in a receiving mode; wherein the digital synthesizer and the phase locked loop form a digital synthesizer-driven phase locked loop, and the digital synthesizer driven phase locked loop is configured to operate in a modulating state when the transceiver is in the transmitting mode and is configured to operate in an oscillating state when the transceiver is in the receiving mode; and wherein the phase locked loop is configured to perform a first filtering in response to the first control signal, and is configured to perform a second filtering in response to the second control signal.~~

. Claim 32 amended as the following:

32. (Currently Amended) A unit comprising:

a transceiver comprising,

a digital synthesizer, and

a phase locked loop;

wherein when the transceiver is in a transmitting mode, the digital synthesizer ~~receives~~ is configured to receive a modulation signal, ~~modulates~~ modulate a reference signal in response to the modulation signal, and ~~transmits~~ transmit the

modulated reference signal to the phase locked loop; ~~and~~ wherein when the transceiver is in a receiving mode, the digital synthesizer ~~receives-is configured to receive~~ a non-modulation signal, ~~generates-generate~~ a non-modulated reference signal, and ~~transmits-transmit~~ the non-modulated reference signal to the phase locked loop; and wherein the digital synthesizer and the phase locked loop form a digital synthesizer-driven phase locked loop, and the digital synthesizer-driven phase locked loop is configured to operate in a modulating state when the transceiver is in the transmitting mode and is configured to operate in an oscillating state when the transceiver is in the receiving mode.

. Claims 34, 36 and 37 amended as the following:

34. (Currently Amended) A method of transmitting signals, the method comprising:

transmitting a modulation signal to a digital synthesizer of a transceiver when the transceiver is in a transmitting mode;

transmitting a non-modulation signal to the digital synthesizer when the transceiver is in a receiving mode;

in response to receiving the modulation signal, modulating by the digital synthesizer a reference signal by the modulation signal and transmitting the modulated reference signal to a phase locked loop of the transceiver, and

in response to receiving the non-modulation signal, generating by the digital synthesizer a non-modulated reference signal and transmitting the non-

modulated reference signal to the phase locked loop;
operating the digital synthesizer and the phase locked loop as a digital
synthesizer-driven phase locked loop;
operating the digital synthesizer-driven phase locked loop in a modulating state
when the transceiver is in the transmitting mode; and
operating the digital synthesizer-driven phase locked loop in an oscillating state
when the transceiver is in the receiving mode.

36. (Currently Amended) The method in accordance with Claim 35 34 further comprising: performing a first filtering ... in the receiving mode.

37. (Currently Amended) The method in accordance with Claim 35 34 further comprising: in response to a first control signal, performing ...using the phase locked loop.

. Claims 39, 41 and 42 amended as the following:

39. (Currently Amended) A method of transmitting signals, the method comprising:
in response to receiving a modulation signal, modulating by a digital synthesizer of a transceiver a reference signal by a modulation signal and transmitting the modulated reference signal to a phase locked loop of the transceiver, and

in response to receiving a non-modulation signal, generating by the digital synthesizer a non-modulated reference signal and transmitting the non-modulated reference signal to the phase locked loop;
wherein the modulation signal is transmitted to the digital synthesizer by a modulation signal generator when the transceiver is in a transmitting mode, and wherein the non-modulation signal is transmitted to the digital synthesizer by a non-modulation signal generator when the transceiver is in a receiving mode;
and operating the digital synthesizer and the phase locked loop as a digital synthesizer-driven phase locked loop; operating the digital synthesizer-driven phase locked loop in a modulating state when the transceiver is in the transmitting mode; and operating the digital synthesizer-driven phase locked loop in an oscillating state when the transceiver is in the receiving mode.

41. (Currently Amended) The method in accordance with Claim 40 39 further comprising: performing a first filtering ... in the receiving mode.

42. (Currently Amended) The method in accordance with Claim 40 39 further comprising: in response to a first control signal, performing ...using the phase locked loop.

. Claim 44 amended as the following:

44. (Currently Amended) A method of transmitting signals, the method comprising:

in response to receiving a first control signal, transmitting a modulation signal to a digital synthesizer of a transceiver; and in response to receiving a second control signal, transmitting a non-modulation signal to the digital synthesizer; wherein the first control signal is generated when the transceiver is in a transmitting mode and the second control signal is generated when the transceiver is in a receiving mode;
operating the digital synthesizer and the phase locked loop-as a digital synthesizer-driven phase locked loop;
operating the digital synthesizer-driven phase locked loop in a modulating state when the transceiver is in the transmitting mode; and
operating the digital synthesizer-driven phase locked loop in an oscillating state when the transceiver is in the receiving mode.

(End of Amendment)

Reasons for Allowance

5. Claims 1-20, 22, 26-31, 33, 35, 40 and 47 cancelled.
6. Claims 21, 23, 24, 25, 32, 34, 36-39 and 41-46 allowed over the prior art record.
7. The following is an examiner's statement of reasons for allowance:

The applicant's remarks, filed on 11/09/2009, have been carefully reviewed with updated search. Consequently, reasons for allowance of claims 21, 23, 24, 25, 32, 34,

36-39 and 41-46 are set forth in according to the applicant's remarks state on pages 13-17.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

8. Any response to this action should be mailed to:

Mail Stop_____ (Explanation, e.g., Amendment or After-final, etc.)

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(571) 273-8300

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Alexandria, VA 22313

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan H. Nguyen whose telephone number is (571) 272-8329. The examiner can normally be reached on 8:00Am - 5:00Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Maung Nay A. can be reached on (571) 272-7882. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Tuan H. Nguyen/
Examiner
Art Unit 2618

